B

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,798	07/02/2003	Gesine Arends	2493 A	5336

7590 03/17/2006

STRIKER, STRIKER & STENBY
103 East Neck Road
Huntington, NY 11743

EXAMINER	
LEUNG, JENNIFER A	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,798	ARENDS ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/396,144.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on October 12, 2005 has been received and carefully considered. Claims 1-11 are under consideration.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following elements must be shown or the feature(s) canceled from the claim(s):

In claim 1, line 16: "a flap for closing the outlet opening".

In claim 5, lines 3-4: "at least one apportioning element".

In claim 6, lines 2-3: "at least one control unit... controlling the apportioning element".

In claim 10, line 1: a "fuel cell assembly" comprising "a fuel cell unit".

In claim 11, line 1: a "motor vehicle" comprising "a fuel cell assembly".

No new matter should be entered.

3. The drawings are objected to because the following reference numerals do not point to the described structures in the specification:

2 points to the flue gas chamber instead of the first reformer stage.

3 points to the gap instead of the second reformer stage.

8a points to a second reformer stage instead of the flue gas chamber.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanizaki et al. (JP 06-227801).

Regarding claim 1, Tanizaki et al. (see FIG. 1-3; Abstract; Machine Translation) discloses an apparatus comprising: a heating apparatus (i.e., an engine **2**; FIG. 1) producing a heating stream (i.e., an exhaust gas, used as a heat source, and supplied via inlet **11**); a first converter (i.e., a vaporizer **8**; FIG. 2) and a second converter (i.e., a reforming reactional part **9**; FIG. 2) arranged behind the first converter, wherein the flow of matter (i.e., fuel supplied to fuel

inlet **7**) is converted in the first converter and the second converter; a first heating element (i.e., a first exhaust gas passage layer **15**; FIG. 3) flowed through by the heating stream for heating at least one of the first and second converters **8,9**, wherein the heating stream **15** for the second converter **9** flows completely in a counterflow direction to the flow of matter (i.e., as shown in FIG. 2, the heat stream flows from inlet **11** through layers **15** to outlet **12**; the fuel stream flow from inlet **7** through layers **14** of converter **9** to outlet **10**); and an outlet opening, wherein the heating stream is separated into two flue gas partial flows (i.e., the main flow through exhaust layer **15**, or to a bypass passage, not labeled, shown to the right of converters **8** and **9**), wherein one of the flue gas partial flows is provided with a flap for closing the outlet opening (i.e., a regulator valve **13**, shown in FIG. 2 as a "flap").

Regarding claim 2, the heating stream is counterflow to the flow of matter (i.e., the heating stream flows from inlet **11** to outlet **12**; the matter flows from inlet **7** to outlet **10**).

Regarding claim 3, at least one second heating element (i.e., a second exhaust gas passage layer **15**; FIG. 3) flowed-through by the heating stream.

Instant claims 1-3 structurally read on the apparatus of Tanizaki et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al. (JP 63-049249).

Regarding claim 1, Yoshioka et al. (see FIG. 1, 2; abstract) discloses an apparatus comprising: a heating apparatus (i.e., burner **7**) producing a heating stream; a first converter (i.e., vaporizer **9**) and a second converter (i.e., reactor **10**) arranged behind the first converter, wherein the flow of matter (i.e., methanol supplied to inlet **14**) is converted in the first converter and the second converter; a first heating element (i.e., heating chamber **8a**) flowed through by the heating stream for heating at least one of the first and second converters; and an outlet opening (i.e., to space **27** and pipe **28**), wherein the heating stream is separated into two flue gas partial flows (i.e., either flowing to pipe **28** or flow to heating space **8b**), wherein one of the flue gas partial flows is provided with a flow control valve **29** for closing the outlet opening.

Yoshioka et al. is silent as to whether the flow control valve **29** comprises a "flap". In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select a flap for the flow control valve **29** in the apparatus of Yoshioka et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the Examiner takes Official Notice that flow control valves comprising "flaps" are conventionally known flow regulating structures, and it has been held that the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532

(CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claim 2, the heating stream for the first and second converters flows completely in a counterflow direction to the flow of matter (i.e., the downward flow of the heat stream in region **8a** is counter to the upward flow of matter in reactor **10** and vaporizer **9**).

Regarding claim 3, the apparatus comprises at least one second heating element flowed-through by the heating stream (i.e., the heating chamber **8b**; FIG. 2).

Regarding claim 4, the at least one second heating element **8b** is disposed between the first and second converters (i.e., the chamber **8b** comprises a region, not labeled, located between the partition **16** and the inner wall of reactor **10**; FIG. 2).

Regarding claim 5, an inlet opening and/or an outlet opening of the first and/or second heating element **8a,8b** has at least one apportioning element for apportioning the heating stream (i.e., a chamber **27** to conduit **28** and valve **29**).

Regarding claim 6, a control unit (i.e., elements **34, 35, 36**; FIG. 1) is provided for controlling the apportioning element (i.e., for controlling the opening and closing of valve **29**).

Regarding claim 7, the first and second converters **9,10** and/or the first and second heating elements **8a,8b** (see FIG. 2) are arranged approximately coaxially to one another.

Regarding claims 8 and 9, the heating apparatus **7** is arranged approximately coaxially, and centrally, to the converters **9,10** and/or the heating elements **8a,8b**.

Regarding claim 10, as shown in FIG. 4, the apparatus further comprises a fuel cell **1**.

Regarding claim 11, although a motor vehicle is not described in the Abstract or shown in the figures, the modified apparatus of Yoshioka et al. structurally meets the claim because the

recitation of a motor vehicle has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the fuel cell assembly of Yoshioka et al. in a motor vehicle, on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the Examiner takes Official Notice that the use of fuel cells for powering motor vehicles is conventionally known in the art.

7. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamoshita et al. (JP 63-289775).

Regarding claim 1, Kamoshita et al. (see FIG. 1 and Abstract) discloses an apparatus comprising: a heating apparatus (i.e., burner 7); a first converter (i.e., vaporizer **9**) and a second converter (i.e., reactor **10**) arranged behind the first converter **9**, wherein the flow of matter (i.e., methanol from duct **14**) is converted in the first converter **9** and the second converter **10**; a first heating element (i.e., heating chamber **8a**) flowed through by the heating stream from burner 7; and an outlet opening (i.e., at the end of discharge pipe **24**), wherein the heating stream is separated into two flue gas partial flows (i.e., either through the discharge pipe **24** or towards the other discharge pipe **21**), wherein one of the flue gas partial flows is provided with a flow control valve **25** for closing the outlet opening.

Kamoshita et al. is silent as to whether the flow control valve **25** comprises a "flap". In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select a flap for the flow control valve **25** in the apparatus of Kamoshita et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the Examiner takes Official Notice that flow control valves comprising "flaps" are conventionally known flow regulating structures, and it has been held that the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claim 2, the heating stream flows completely in a counterflow direction to the flow of matter (i.e., heat stream flow in region **8a** is counter to the flow of matter in reactor **10**; heat stream flow in region **8b** is counter to the flow of matter in duct **14**; see FIG. 1).

Regarding claim 3, the apparatus comprises at least one second heating element (i.e., the heating chamber **8b**) flowed-through by the heating stream, provided for heating one of the first and second converters (i.e., for heating the second converter **10**).

Regarding claim 4, the at least one second heating element **8b** is disposed between the first and second converters **9,10** (i.e., in the region located between the partition wall **16** and the inner wall of the reactor **10**; see FIG. 1).

Regarding claim 5, an inlet opening and/or an outlet opening of the first and/or second heating element **8a,8b** has at least one apportioning element for apportioning the heating stream (i.e., a flow dividing element comprising the discharge pipe **24** with flow control valve **25**, for "apportioning" the flow of the heating stream from heating chamber **8a**; see FIG. 1).

Regarding claim 6, the "apportioning element" comprises a flow control valve **25**. Although the abstract and figures of Kamoshita et al. is silent as to the flow control valve **25** being controlled by at least one control unit, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a control unit for controlling the flow control valve **25** in the apparatus of Kamoshita et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the Examiner takes Official Notice that the provision of control units for enabling the automated control of control valves is well known in the art. Furthermore, the provision of mechanical or automated means to replace manual activity was held to have been obvious. *In re Venner* 120 USPQ 192 (CCPA 1958); *In re Rundell* 9 USPQ 220 (CCPA 1931).

Regarding claim 7, the first and second converters **9,10** and/or the first and second heating elements **8a,8b** are arranged approximately coaxially to one another (see FIG. 1).

Regarding claims 8 and 9, the heating apparatus 7 is arranged approximately coaxially, and centrally, to the converters **9,10** and/or the heating elements **8a,8b** (see FIG. 1).

Regarding claim 10, Kamoshita et al. further discloses a fuel cell unit **1** (see FIG. 2).

Regarding claim 11, although a motor vehicle is not described in the Abstract or shown in the figures, the modified apparatus of Kamoshita et al. structurally meets the claim because the recitation of a motor vehicle has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15

(CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the fuel cell assembly of Kamoshita et al. in a motor vehicle, on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the Examiner takes Official Notice that the use of fuel cells for powering motor vehicles is conventionally known in the art.

Response to Arguments

8. The provisional double patenting rejection made in the prior Office action is withdrawn, due to the abandonment of U.S. Patent Application No. 10/396,144.

9. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection, necessitated by amendment.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Mizuno et al. (JP 02-120205) is provided to illustrate the state of the art (in particular, note the dual reforming zones arranged in a serial flow configuration, FIGs. 4-9).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung
March 13, 2006

Hien Tran

HIEN TRAN
PRIMARY EXAMINER